

Claims

1. A multicast-enabled network element comprising:
 - 5 a first logical interface for receiving a file from a content provider;
 - a second logical interface for forwarding said file to one or more hosts as a sequence of data packets in a file delivery transmission; and
 - 10 a processor for defining a group of one or more hosts, wherein further hosts may be added to the group in response to the reception of a request from said further host, the group being limited to further hosts situated within a single locational area;
 - 15 wherein said server is configured to transmit the file to the group so that said further hosts joining the group during transmission of the data packet sequence receive the remaining data packets in said sequence.
2. A network element according to claim 1, further configured to transmit the file via a first communication network and to receive requests from the hosts via a second communication network.
- 20 3. A network element according to claim 1 or 2, wherein one or both of a request and the file is transmitted between the network element and the host via a cellular communications network and the locational area is defined in terms of a cell, so that the group is limited to hosts situated in a locational area covered by a single cell.
- 25 4. A network element according to claim 1, 2 or 3, further configured to forward the file to the host over a wireless communication network, being the last network element situated before an air-interface in a file delivery path between the content provider and the host.
- 30 5. A network element according to any one of the preceding claims, further comprising a file request handler for encrypting information in headers of the data packets relating to the correct order of data packets in the file delivery transmission.

6. A network element according to any one of the preceding claims, further configured so that, where a host has submitted a request during the file delivery transmission, the point in the file delivery transmission at which the host joins the
5 group is logged.

7. A network element according to any one of the preceding claims, further configured so that, where a host has joined the group during the file delivery transmission, the forwarding of the last packet in the data packet sequence is
10 followed by a repeat transmission of the file.

8. A network element according to any one of the preceding claims, configured to receive a negative acknowledgement message and to treat said message as a ,
request for the file.

15 9. A method of file delivery over a network comprising the steps of:
receiving at a network element a request for the file from a first host;
retrieving the file from a content provider;
defining a group comprising the first host;
20 forwarding the file to the group as a sequence of data packets in a file
delivery transmission; and

adding to the group any further hosts submitting requests for the file during
said file delivery transmission so that said further hosts receive the remaining data
packets in said file delivery transmission,
25 wherein the group is limited to further receiver hosts with a same locational area as
the first host.

10. A method according to claim 9, wherein the file is forwarded via a first
communication network and the request from the first host is received via a second
30 communication network.

11. A method according to claim 9 or 10, wherein one or both of a request and
the file is transmitted between the network element and the first host via a cellular

communications network and the locational area is defined in terms of a cell, so that the group is limited to receiver hosts situated in an area covered by a single cell.

12. A method according to claim 9, 10 or 11, further comprising encrypting information in headers of the data packets relating to the correct order of data packets in the file delivery transmission.

13. A method according to any one of claims 9 to 12, further comprising, where a further host has submitted a request during the file delivery transmission, logging 10 the point in the file delivery transmission at which said further host joins the group.

14. A method according to any one of claims 9 to 13, wherein, if one or more further hosts have joined the group during the file delivery transmission, the file is re-transmitted following the completion of the sequence of data packets.

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15. A computer program comprising program instructions for causing a network element to perform the method of any one of claims 9 to 14.

16. A computer program according to claim 15, embodied on computer readable 20 medium.

17. A method of file retrieval by a host over a network comprising the steps of: sending a request to join a group to a network element; receiving a start packet transmitted by the network element which configures 25 the connection between the network element and host; receiving a sequence of data packets transmitted by the network element in a first file delivery transmission; arranging the sequence of data packets in their appropriate order; and receiving a second file delivery transmission comprising the sequence of data 30 packets; wherein the host retrieves any data packets that were dropped or missed in the first file delivery transmission by retrieving the corresponding data packets in the second file delivery transmission.

18. A method according to claim 17, wherein the file is transmitted via a first communication network and the request from the first host is received via a second communication network.